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Original Article

Practice of Modified Safety Measures for COVID-19 Adopted by Dental Health Care Providers and Barriers Faced

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ABSTRACT

The COVID-19 infection has influenced almost everyone belonging to every walk of life especially dental practitioners are introduced to a higher bet of getting infected because of close contact with such patients. The COVID-19 has put an enormous hassle on clinical benefits system across the globe. The dental practice is to highly needed change in accordance with the new scourge circumstance in order to reduce the risks of SARS-CoV-2 infection transmission. **Objective:** To investigate practice of modified safety measures by the dentists regarding COVID-19 outbreak. **Methods:** Descriptive cross-sectional study was conducted among dentists working at Institute of dentistry Liaquat University of Medical and Health Sciences Jamshoro, Dental outpatient department of Hyderabad, and private dental practitioners of Hyderabad city, Pakistan by convenience sampling technique. The analysis of data were conducted using SPSS version 23.0 after adjusting the potential confounders and to analyze association between dentist response and age, gender, and other characteristics by applying Chi-Square test. **Results:** Most of the dental professionals are scared of developing COVID-19 from a patient or co-worker (83.17%) and are well known about its transmission (93.36%) and use PPE (74.17%). **Conclusions:** Although having a high valuable level of knowledge and practice, dental practitioners around the world are in a state of anxiety and dread while working in their respective fields due to the COVID-19 pandemic impact on mankind.

INTRODUCTION

A pandemic outburst of novel corona virus (COVID-19) originated from Wuhan, China, Hubei Province, and has spread globally [1]. It is single-stranded enclosed RNA virus of Coronaviridae family. Moreover, the WHO declared it a worldwide pandemic illness on 11th March-2020. SARS-Cov2, being zoonotic virus, may pass from animals to people with incubation period of two-week. Symptoms include cough, weariness, fever, dyspnea, ageusia, anosmia [2]. The pandemic's major infectious mechanisms include direct contact and airborne transmission. Droplets discharged during exhalation, coughing, or sneezing cause airborne contagions, whereas direct infection is caused by contact with infected oral mucosa, nose surface, or eye surface [3]. A greater proportion of doctors seem to have contracted the illness while working with infected patients. A comparable danger of transferring and getting the illness exists in the dentistry profession. Dentists are subjected to infections present in patients' dental cavities as well as pulmonary tracts during treatments involving close proximity including face-to-face contact, as well as the use

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of AGPs [4-7]. Dentists have among the highest COVID-19 infection rates of any medical specialty. The use of gloves, face masks, and hand hygiene practices comprising frequently hand washing using water & soap or with alcohol-comprising hand sanitizers have been advised as universal precautions /methods for reducing the transmission of the virus. Full-face shields, eye protection, fluid-resistant disposable gowns, and FFP respirators are among the other improved PPE options [8-10]. Health and Government organizations throughout the world, including Pakistan, have kept up with unique standards for each location and enacted rigid policies to battle the pandemic, mostly by lowering the risk of transmission [11]. The new coronavirus has provided a variety of obstacles to the safe practice of dentistry, since all conventional dental offices were closed during the pandemic as well as their everyday activity schedules were updated and adapted to reduce the possible hazards from a perplexing and masked opponent [12-15]. Dental crises, on the other hand, need dentists taking care, especially since the WHO declared it as a public health emergency on 30th January 2020. The only method to protect dental practice is to use modified protective measures [16-20]. A considerable number of practicing dentists are reported to develop COVID-19 in current pandemic, making it critical for them to adequately implement safety precautions against this lethal virus. The current study is expected to contribute to the field of dentistry by exploring the protective measures taken by dental health care providers and the challenges they experienced in dental practice during the pandemic. It will additionally be advantageous in the future to supply material to the dentist profession so that they may effectively battle dental emergencies in their clinics in pandemic by following all of the updated methods and carefully recommending standard operating procedures. The study also aims to assess the socio-demographic barriers that dental practitioners experience in implementing updated infection-prevention techniques.

METHODS

Descriptive Cross-sectional Study was conducted at Institute of Dentistry Liaquat University of Medical and Health Sciences Jamshoro & Dental Out Patient Department Hyderabad, Private dental practitioners of Hyderabad city by non-probability convenience sampling method within six months of duration i.e., from 18th March 2021 to 17th September 2021 after approval by the Institutional Research Ethics Committee of LUMHS Jamshoro. (NO.LUMHS/REC/-55).Questionnaire was developed and distributed among participants to gain the responses after getting sign on written consent form. Consultants, Postgraduates, House Officers were included in this study and new dental practitioners, dentists involved in malpractice and dentists not working on clinical practice were blocked from the review. Due to dearth of literature on this aspect of research, we take proportion of dental practitioners experiencing various barriers against safe & modified safety practices for prevention of COVID-19 as 50%. The following formula is used to compute the sample size for this research:

$n = Z^2 \times p \times q / e^2$

Where:

n= Prerequisite sample size

e= Margin of error at 5% and 95% confidence interval level and 10% of non-responders, incomplete filling questionnaire, the sample size is 422. After the approval from Research Ethics Committee, the data were collected from the dentists, house officers, postgraduates, consultants and written consents from the respondents before participating in the study was taken. The subjects, who fulfilled the inclusion criteria, fill the questionnaire and were recruited in this study. Data were entered in SPSS version 23.0 for windows. The frequency calculations were done for categorical variables including gender and different barriers adopted for safety measures for COVID-19. The Chi-square test was used to seek the associations between the research participants' socio-demographic factors and the hurdles they experienced. p-value <0.05 was considered significant.

RESULTS

The demographic information of the participants is presented in Table 1. Out of a total of 422participants, 261 were male and 161 females, with ages between 23 and 50 years. By designation, 90 were House officers, 138 general dentists, 144 postgraduates and 50 consultants (Table 1).

Table 1: Demographic Profile of Study Subjects

Demographics	Attributes	Frequency (%)
Age (Years)	23-28	210 (49.76)
	29-34	180 (42.65)
	35-40	20 (4.73)
	41-45	8 (1.86)
	46-50	4 (1.00)
Gender	Male	261 (61.85)
	Female	161 (38.15)
Designation	House officers	90 (21.32)
	General dentists	138 (32.70)
	Postgraduates	144 (34.12)
	Consultants/Specialists	50 (11.86)

In Table 2 there is a description of the practice of modified safety measures and awareness of dental healthcare professionals regarding COVID-19; 83.17% of respondents were frightened of acquiring COVID-19 from any co-worker or patient. More than 90% of participants are notable about COVID-19 transmission routes. Similarly, 74.17% have used PPE in their dental practices, 68.95% recorded every

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patient's body temperature before doing dental procedures, and 77.25% ask for PCR-Test COVID-19 from patients who disclosed suspicious signs and limited their clinical work for emergency cases. Ninety percent of dentists reported that their profession was negatively affected by this outbreak. Barriers faced by the participants during COVID-19, 97.86% presents 74.17% provide hand sanitizer to their patients as they enter in the dental clinics and use PPE in their clinics.58.06% deferred dental treatment of patients indicating dubious signs.

Table 2: Knowledge, Practice Modification & Barriers About COVID-19

Question	Frequency (%)
Are you scared of developing COVID-19 from a patient and co-worker?	Yes=351 (83.17)
	No=40 (9.47)
	Sometimes=31 (7.36)
Have you used hand sanitizer and personal protective equipment (PPE) in your dental practice?	Yes=313 (74.17)
	No=19 (4.50)
	Sometimes=90 (21.33)
Are you familiar with mode of transmission of COVID-19?	Yes=394 (93.36)
	No=28 (6.64)
Do you use a thermo gun for taking body temperature of each patient before entering in dental office?	Yes=291 (68.95)
	No=53 (12.55)
	Sometimes=78 (18.50)
Are you conceding treatment of patients showing dubious indications?	Yes=245 (58.06)
	No=93 (22.30)
	Sometimes=84(19.64)
Are you taking report of PCR-test of COVID-19 earlier than treatment from every suspected person and confined your practice to mainly emergency procedures?	Yes=326 (77.25)
	No=35 (8.29)
	Sometimes=61 (14.46)
Has COVID-19 pandemic had a negative impact on your profession?	Yes=382 (90.52)
	No=40 (9.48)

In Table 3 there is a description of the practice of modified safety measures and association of age of respondents.

Table 3: Association of Age of Participants

Question	Age (Years)	Response	p-value
Are you scared of developing COVID-19 from a patient and Co-worker?	23-28	Yes=351	≤ 0.00
	29-34	No=40	
	35-40	Sometimes=31	
	41-46		
	47-50		
Have you used hand sanitizer and personal protective equipment (PPE) in your dental practice?	23-28	Yes=313	≤ 0.01
	29-34	No=19	
	35-40	Sometimes=90	
	41-46		
	47-50		
Are you familiar with mode of transmission of COVID-19?	23-28	Yes=385	≤ 0.01
	29-34	No=37	
	35-40		
	41-46		
	47-50		
Do you use a thermo gun for taking body temperature of each patient before entering in dental office?	23-28	Yes=291	≤ 0.01
	29-34	No=53	
	35-40		
	41-46	Sometimes=78	
	47-50		
Are you conceding treatment of patients showing dubious indications?	23-28	Yes=245	≤ 0.07
	29-34	No=93	
	35-40	Sometimes=84	
	41-46		
	47-50		
Are you taking report of PCR-test of COVID-19 earlier than treatment from every suspected person and have you confined your practice to mainly emergency only?	23-28	Yes=307	≤ 0.06
	35-40		
	29-34	No=43	
	35-40		
	41-46	No=43	
	47-50	Sometimes=72	
Has COVID-19 pandemic had a negative impact on your profession?	23-28	Yes=382	≤ 0.00
	29-34	No=40	
	35-40		
	41-46		
	47-50		

In Table 4 there is a description of the practice of modified safety measures and association of gender of respondents.

Table 4: Association of Gender of Participants

Question	Response	Male	Female	p-value
Are you scared of developing COVID-19 from a patient and Co-worker?	Yes	210	141	0.001
	No	32	8	
	Sometimes	19	12	
Have you used hand sanitizer and personal protective equipment (PPE) in your dental practice?	Yes	181	132	0.002
	No	10	9	
	Sometimes	70	20	
Are you familiar with mode of transmission of COVID-19?	Yes	233	152	0.001
	No	28	9	
Do you use a thermo gun for taking body temperature of each patient before entering in dental office?	Yes	178	113	0.001
	No	33	20	
	Sometimes	50	28	
Are you conceding treatment of patients showing dubious indications?	Yes	137	144	0.00
	No	42	13	
	Sometimes	82	4	
Are you taking report of PCR-test of COVID-19 earlier than treatment from every suspected person and confined your practice to mainly emergency procedures only?	Yes	165	142	0.01
	No	35	8	
	Sometimes	61	11	
Has COVID-19 pandemic had a negative impact on your profession?	Yes	224	158	0.00
	No	37	3	

DISCUSSION

Because of the increase of aerosols when conducting dental medications in their working conditions, dental experts have been shown to be at a significant risk of being infected with COVID-19 [21]. The present cross-sectional study demonstrated dental experts' anxiety and dread when humming in the midst of the present viral episode. For this investigation, a questionnaire-based

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survey was used to gather information on dental specialists' fear and any training changes made to combat the COVID-19 flare-up pandemic. COVID-19's influence, which has gripped a massive number of lives on a worldwide scale, ranging from scattered and concealed to tragedy, has caused dread. Because of its long hatching time (approximately upto14 days), it's challenging to determine an individual's susceptibility to infection [22-25]. The research was divided into three sections and based on a survey. Segment 1 focused on socio-demographic representation: age, gender, and job title. The majority of respondents were males and females (61.85% and 38.15% respectively). The population ranged in age from 23 to 50 years old and included General Dentists, Postgraduates, House Surgeons, and Consultants. Part 2 focused on the education of the dental professionals' changing security assessments throughout the viral episode: In addition, contrary to our findings, Fallahi *et al.*, said that confronting COVID-19 outbreak threat, majority of dentists were worried concerning their families as well as concerning themselves, and similar results were reported in a review conducted amongst dental specialists of Turkish community [25, 26]. The Part 3 of research looked into the challenges faced by pandemic victims. In dentistry centers, the majority of members had made patient wellness and COVID-19 balancing a priority. The majority of dental professionals are willing to treat any patient who details negative consequences. The way patients are welcomed into the dentist office has also altered; 67.29% of participants hand sanitizer to their patients upon arrival. While a review performed in Brazil by González-Olmo *et al.*, indicated that (64.6%) members attended to merely urgencies, and 58.5% offered dental attention without staff, 58.06% of responders have linked their schooling to essentially crisis systems [27]. The ADA, CDC, and WHO have proposed practical regulations for dental experts and dental personnel to restrict the spread of COVID-19 [18-20]. According to Martina *et al.*, and Li *et al.*, PPE, hand washing, a thorough patient assessment, rubber dam isolations, anti-retraction hand pieces, mouth flushing prior to dental treatments, and center sanitization are all included [28-31]. The viability and accessibility of personal protective equipment (PPE) is a crucial factor of the threats that are posed to medical professionals. Similarly, Goswami and Chawla discovered that 92.9% of dentists use personal protection equipment such masks, goggles, and gloves, and 96.2% clean their hands often using antiseptics containing alcohol and water and soap [32]. Moreover, Khader *et al.*, revealed that even though Jordanian dental professionals were aware of COVID-19 symptoms, infection control, transmission mode, and precautions in dental clinics; the increased level of suspicion was evidenced as a necessity to shut down their practices, which could have had basic financial implications [33]. A study conducted by Wang *et al.*, in a dental urgent work space in Beijing, China, found that the COVID-19 pandemic has had an effect on the prevalence of dental prescriptions that has decreased in the grip division as compared to pre-COVID-19 levels. In the aftermath of the COVID-19 pandemic, there has been less dental injury, and the degree of dental and oral sickness has increased, while non-centrality and dental injury have reduced [34]. The burden on medical services system and the costs associated with medication also puts one's mind under strain, which can result in a significant financial burden. As previously stated, further protections are required, including careful pre-testing of individuals and other steps if treatment for patients with confirmed COVID-19 is deemed critical. According to the American Dental Association's most recent report, dental professionals around the country should postpone elective dental procedures for the next three weeks as well as focus on crisis care [35-37].

CONCLUSIONS

The research aiming at exploring modified safety measures adopted by dental health care providers concludes that they face many obstacles in adopting safety measures. The 83.17% of the participants are scared of contracting COVID-19 infection for their patients. This has resulted in confining themselves to practice in the emergency procedures (58.06%). The barriers faced by dental health care providers have significant associations across all groups of age, gender (p-value ≤0.01). Because of the quickly changing circumstances, more research into the effects of COVID-19 in dental practice is needed.

Authors Contribution

Conceptualization: RUK, SPR
Methodology: ZN
Formal analysis: NT
Writing-review and editing: KNM, QK

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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